

REMARKS

Claims 1, 2 and 4-15 remain pending after amendment.

Claim Amendments

Claims 1, 9, 11 and 12 are amended to state that "polymer fibers are positioned between at least some laterally adjacent metallic filaments such that at least some polymer fibers are not totally surrounded by metallic filaments whereby gaps are formed between at least some laterally adjacent metallic filaments after the polymer fibers are softened or melted under vulcanization conditions". Support for this amendment exists at least at the Figures 1A-C and 2A-C, and the accompanying description of same in the specification. No new matter is added by this amendment.

Interview with Examiner

Applicants thank the Examiner for the courtesy extended toward their representative during the interview of July 29, 2003. No agreement was reached during the interview. However, it was agreed that applicants would present amended claims in an attempt to more clearly distinguish over the cited prior art.

Applicants' Invention

Applicants' invention is directed to a composite cord having a $1 \times n$ construction where n is an integer from 3 to 12 with from 2 to 11 metallic filaments and from 1 to 5 polymer fibers having a melting point of from 50 °C to 200 °C twisted together, wherein no fiber constitutes a core of the composite cord. In one embodiment, the metallic filaments do not form a sheath around the core, and the metallic filaments are placed with gaps after the polymer fibers are softened or melted under vulcanization conditions. Preferably, the polymer fiber and metallic filaments are twisted together at approximately constant pitches and displaced from one another in a longitudinal direction.

Applicants' invention also comprises a tire including the above composite core as a reinforcing element, as well as a carcass produced therefrom.

Applicants' claimed invention is neither disclosed nor suggested by the prior art.

Rejection of Claims 1, 2, 4-8, 11 and 14 under 35 USC 103(a)

Claims 1, 2, 4-8, 11 and 14 stand rejected under 35 USC 103(a) as being unpatentable over Starinshak in view of Nakamura WO 85/02210. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

In response, the independent claims are amended to state that "polymer fibers are positioned between at least some laterally adjacent metallic filaments such that at least some polymer fibers are not totally surrounded by metallic filaments whereby gaps are formed between at least some laterally adjacent metallic filaments after the polymer fibers are softened or melted under vulcanization conditions". The cited prior art neither discloses nor suggests the invention as now claimed by applicants.

More specifically, Starinshak is directed to a cord comprised of steel filaments having syndiotactic-1,2-polybutadiene (SPBD) dispersed in the interstices between the steel filaments. The SPBD may be incorporated into the interstices of the cord by means of an SPBD filament cabled into the core area of the cord (column 4, lines 46-51).

By contrast, applicants' invention is directed to a composite cord having a 1 x n construction where n is an integer

from 3 to 12 with from 2 to 11 metallic filaments and from 1 to 5 polymer fibers (polyethylene or polypropylene fibers) having a melting point of from 50 °C to 200 °C twisted together, wherein no fiber constitutes a core of the composite cord to prevent the metallic filaments from forming a sheath around the core. In a preferred embodiment, the polymer fiber and metallic filaments are twisted together at approximately constant pitches and displaced from one another in a longitudinal direction.

Applicants' invention is at odds with that of Starinshak. As noted above, Starinshak teaches that the SPBD material can be incorporated into the cord by means of an SPBD filament placed into the core of the cord. However, applicants' claims provide that no fiber constitutes a core of the cord.

Indeed, it is clear from a review of Figure 1 that the steel filaments 4 may, in one embodiment, surround SPBD filaments, which melt to form a core which is surrounded by the steel filaments. In the embodiment of Figure 1, all steel filaments are adjacent other steel filaments.

In order to more clearly distinguish between the claimed invention and the teachings of the reference, applicants have amended the claims to provide that "polymer fibers are positioned between at least some laterally adjacent metallic

filaments such that at least some polymer fibers are not totally surrounded by metallic filaments whereby gaps are formed between at least some laterally adjacent metallic filaments after the polymer fibers are softened or melted under vulcanization conditions". Such an embodiment is clearly distinguishable from the teachings of the Starinshak et al reference.

The teachings of Nakamura do not cure the deficiencies of Starinshak. Nakamura describes the use of core material that has a lower melting temperature. The reference forms a sheath of metallic filaments around the core, which creates a closed gap between the metallic filaments. The embedding rubber cannot penetrate into the closed gap, which prevents water from entering into the gap. Such teachings are contrary to applicants' invention. Further, one of ordinary skill in the art would not arrive at applicants' invention upon combination of the respective teachings of the two references. Importantly, Starinshak et al requires the use of a rubber material (syndiotactic-1,2-polybutadiene) in the disclosed cables. The use of a non-rubber material such as polyethylene or polypropylene fiber would be inconsistent with the teachings of the reference.

In view of such deficiencies and differences between the claimed invention and the cited prior art, the rejection is without basis and should be withdrawn.

Rejection of Claims 9, 10, 12, 13 and 15 under 35 USC 103(a)

Claims 9, 10, 12, 13 and 15 stand rejected under 35 USC 103(a) as being unpatentable over Starinshak in view of Nakamura and Kobayashi. This rejection respectfully is traversed to the extent deemed to apply to the claims as amended.

The deficiencies of Starinshak and Nakamura are discussed at length above. Kobayashi is cited to teach the claimed cord end count.

However, given the above amendments to the independent claims, the cited reference cannot be said to disclose or suggest the claimed invention. The rejection is thus without basis and should be withdrawn.

The application is now believed to be in condition for allowance and an early indication of same is earnestly solicited.

In the event that any outstanding matters remain in this application, Applicants request that the Examiner contact James

W. Hellwege (Reg. No. 28,808) at (703) 205-8000 to discuss such matters.

Applicant respectfully petitions under the provisions of 37 CFR 1.136(a) and 1.17 for a one month extension of time in which to respond to the Examiner's Official Action. The Extension of Time fee in the amount of \$110.00 is attached hereto.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies to charge payment or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §§ 1.16 or 1.17; particularly, extension of time fees.

Very truly yours,

BIRCH, STEWART, KOLASCH & BIRCH, LLP

By _____

Joseph A. Kolasch
Joseph A. Kolasch
Reg. No. 22,463

JAK/JWH

P.O. Box 747
Falls Church, VA 22040-0747
(703) 205-8000